

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Process of Decortication of Fibrous Plants

We, ALBERT TAYLOR RATLIFF, and RICHARD R. GUICE, both of Hattiesburg, Mississippi, United States of America, both citizens of the United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

10 This invention relates to a process for the decortication of fibrous plants, more especially where the fibrous plants are light and bulky, such as pine needles and cotton stalks.

15 The principal object of the present invention is to provide a process for the rapid and economical production of raw paper pulp, raw cordage fibre, upholstery material, such as used in mattresses, 20 furniture, insulating board, sound-proof board and the like.

It has already been suggested to decorticate fibrous plants by cooking them under pressure and then releasing the 25 pressure to explode or shatter the fibres. The present invention provides a process which comprises cooking fibrous plants under pressure with water in a first digester into which steam is introduced, dis- 30 charging the cooked material into a second digester at a lower pressure for the purpose of opening the fibre and then cooking the fibres with hot water under pressure, with or without a suitable chemical 35 to further dissolve any gummy material, to effect a further disintegration of the fibre.

In the accompanying drawings which show apparatus for carrying out the pro- 40 cess of the present invention,

Fig. 1 represents a side elevational view of a pre-wilter tank and digester inter- connected;

Fig. 2 represents a vertical sectional 45 view through the pre-wilter tank, and

Fig. 3 represents a vertical sectional view through the digester.

The apparatus represented in the draw- ings provides means for subjecting the 50 material being treated to the action of steam and hot water under pressure in a steam-tight vessel to remove any water, soluble acids, gummy material, volatile products therefrom, and then rapidly dis- 55 charging the contents of the steam tight

vessel into another suitable vessel which tends to open the fibre by the rapid expansion and force of the steam or hot water which forces the material into a finely divided state, and also pre-wilts same so that a larger quantity of the raw material predigested charge in the second step of the operation may be obtained.

Referring to the drawings wherein like numerals designate like parts, it can be seen that the tank 5 is a steam tight vessel, having at its top an accessible opening for the loading thereof with raw material. After the pre-wilter tank 5 is 60 filled, the same is filled with water. Subsequently to this the steam line 6 connected to a closed heating coil 6' is turned on from a suitable steam supply after it is brought up to a boiling point of water. 65 The steam may be closed on this line and admitted through the steam line 7 which is connected to a perforated coil 7' which admits steam directly into the contents 70 of the vessel 5 until the pressure has reached the predetermined desired amount, at which point the quick opening valve 8 is actuated to discharge the con- 75 tents of the tank 5 through the pipe 9 to the digester 10.

In the preliminary cooking of raw 85 material in the tank 5, acids, volatile products, etc., may be blown off at the vent 11 or drawn off at the outlet 12, or drawn off at the outlet valve 13 in the digester 10 after the contents of the pre-wilter 5 90 has been discharged into the digester 10.

When the contents of the pre-wilter tank 5 are blown into the digester 10, the same is filled with water, with or without suitable chemical, to further dissolve or 95 soften any gummy material which is still left therein. When the contents of the digester 10 has been cooked or digested for a predetermined period of time, the contents are then discharged through the 100 conduit valve 14 and discharged to a suitable refining plant. It is, of course, understood that the heating of the digester 10 is obtained through the short closed coil 15, while merging with the convolu- 105 tions of the coil 15 and extending somewhat below the coil 15 is a perforated coil 16, these coils 15 and 16 serving the same purpose as the coils 6' and 7' in the pre- 110 wilter tank.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

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10 A process of treating bulky fibrous plants consisting in first cooking the matter under pressure with water in a digester into which steam is introduced, discharging the cooked material into a second digester at a lower pressure for the purpose of opening the fibre and then treating the material with hot water under

pressure, with or without a suitable chemical to further dissolve any gummy material, to effect a further disintegration of the fibre. 15

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[This Drawing is a reproduction of the Original on a reduced scale.]



